

1.0 INTRODUCTION

The U.S. Army Corps of Engineers, Honolulu District (ACOE) contracted Garcia and Associates (GANDA) to conduct Phase II archaeological research for proposed Stryker Brigade Combat Team (SBCT) at U.S. Army Pohakuloa Training Area (PTA), Island of Hawai'i, as specified in the scope-of-work (SOW) modified September 25, 2002. The project is in the northeastern portion of PTA and includes three separate study areas: PTA Battle Area Complex (BAX), Anti-Armor Live Fire and Training Range (AALFTR) and AALFTR Extension (Figure 1). All three survey areas overlap or encompass the eastern edge of PTA's Impact Area and include portions of Training Area 5, 7, and 21 and Ranges 2-10, 11L and 12 (see Figure 1). Two range access roads bisect the project area on the north (Lava Road) and east side (Redleg Trail).

The main goal of the Phase II work was to evaluate potential significance of all cultural resources in the project area and make recommendations for eligibility to the National Register of Historic Places (NRHP). The work was carried out under the authority of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended through 1992, and Army Regulations (AR) 200-4.

1.1 PROJECT AREA BOUNDARIES

As requested by PTA Range Control, the original project boundaries were altered to exclude the high-hazard area of the Impact Area known to contain Improved Conventional Munitions (ICM). The western boundary of the study areas adjoining the ICM area was delineated during the survey by the presence of practice ICM in the western portion of BAX and by the eastern edge of an *a'ā* flow (k4 flow) (Figure 2) in the western portion of AALFTR and AALFTR Extension. Due to the low-probability of encountering significant cultural resources, only a portion of an 1843 flow (k5 flow) was surveyed in AALFTR Extension, which verified the expected absence of sites.

The surveyed portions of the three study areas comprised approximately 53 percent or 4,380 acres of the original 8,100-acre project area, including roughly 2,892 acres at BAX, 1,048 acres at AALFTR and 448 acres at AALFTR Extension. Unless otherwise specified in this report, the three surveyed study areas will be referred to collectively as the project area.

1.2 PROJECT FRAMEWORK

1.2.1 Phase I Survey

A Phase I survey of the project area was conducted by GANDA, resulting in the identification of 22 potential archaeological sites in the BAX and AALFTR areas (Roberts *et al.* 2003 [draft]). These results were later modified in the final report (Roberts *et al.* 2004a) to agree with the findings and evaluations of the current Phase II study.

As a result of the Phase II work, State site numbers previously assigned to eight possible sites were discarded because five were non-cultural entities (Sites 23450, 23451, 23459, 23460, and 23461) and three were modern (non-historic) military structures (Sites 23452-23454) (Table 1).

1.2.2 AALFTR Extension Survey

The AALFTR Extension area was surveyed during the present Phase II work, resulting in the identification and Phase II documentation of two new sites (Sites 23466 and 23470) and a portion of Site 21670 complex previously recorded by Williams (2002) and Roberts *et al.* 2004b east of Redleg Trail (Table 2).

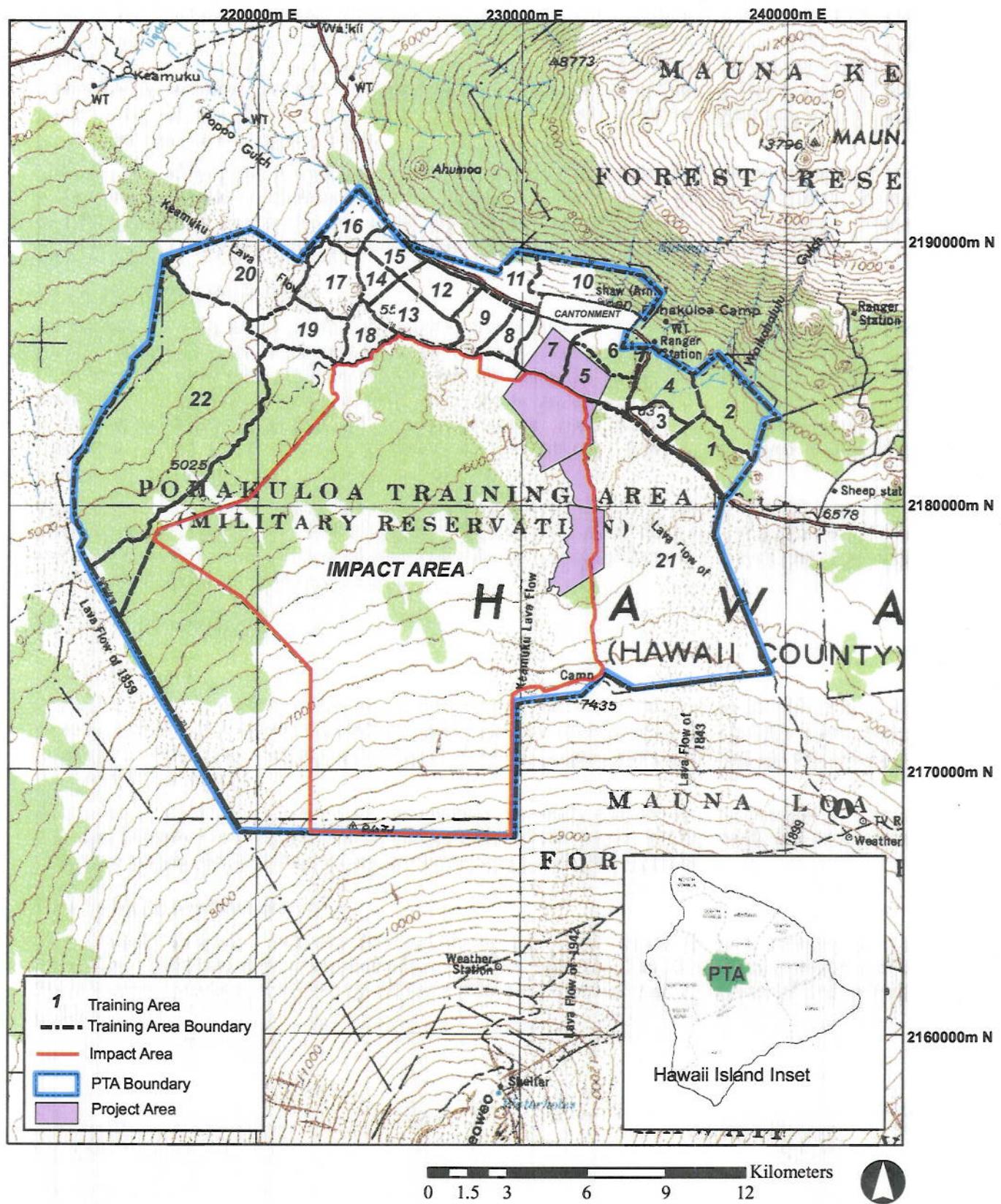


Figure 1. USGS Hawaii Island Map Showing Project Area Location and Training Area Boundaries at PTA

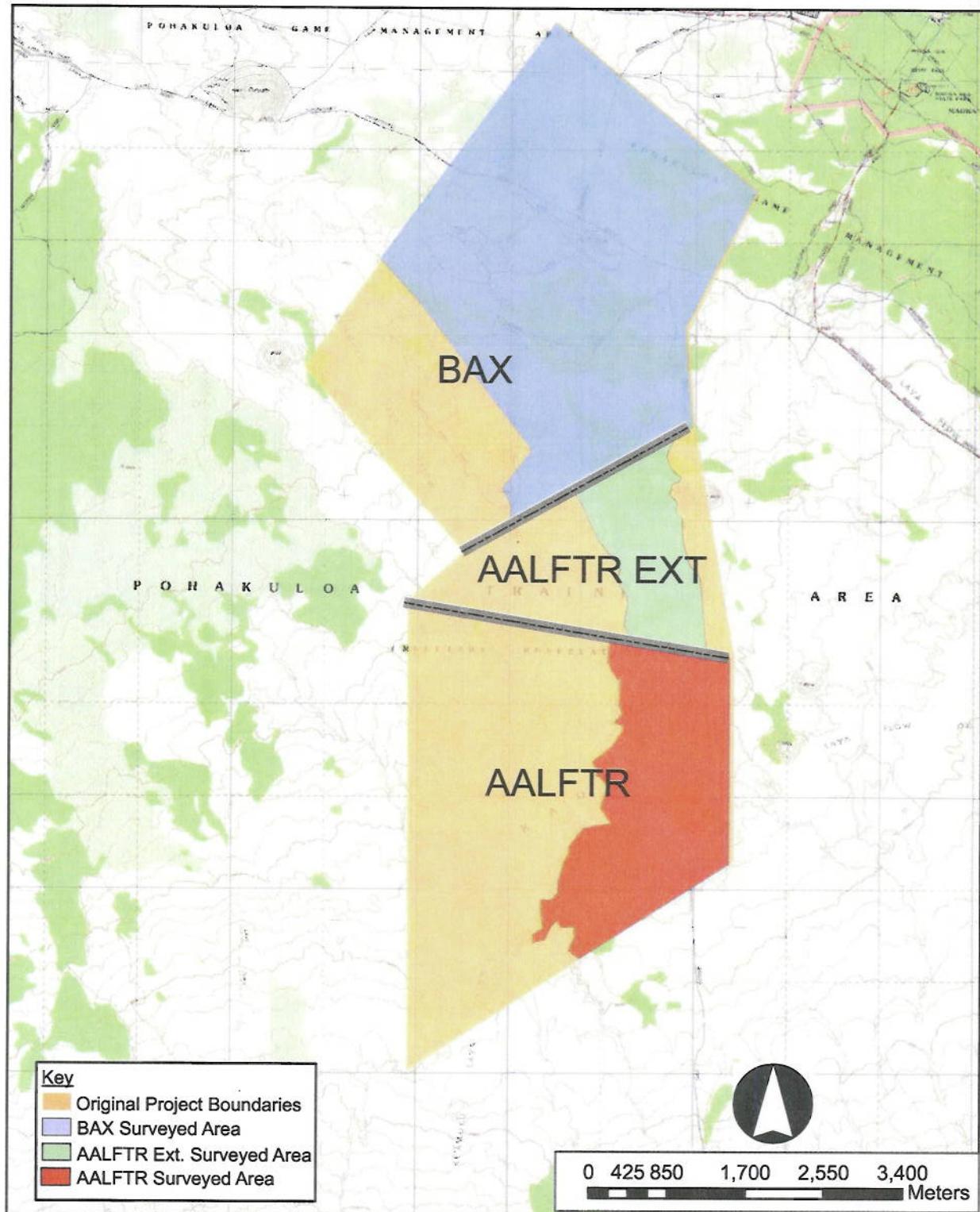


Figure 2. Original Project Footprint Showing Survey Areas in BAX, AALFTR and AALFTR EXT

Table 1. Summary of Phase I Sites and Discarded Site Numbers

State Site No	GANDA Site	Site Type	Site Status/Possible Function	Survey Area
19490	None	Lava tube	Habitation	BAX
23450	600	Mound	<i>Discarded site no. – natural</i>	BAX
23451	601	Sink	<i>Site no. reassigned</i>	BAX
23452	602	Enclosure	<i>Site no. reassigned</i>	BAX
23453	603	Enclosure	<i>Site no reassigned</i>	BAX
23454	604	Modified outcrop	<i>Discarded site no – military</i>	BAX
23456	605	Enclosure	Habitation	BAX
23457	616	Trail	Transportation	BAX
23458	Multiple	Modified outcrop	Volcanic glass quarries	BAX
23459	661	Rockshelter	<i>Discarded site no. – natural</i>	BAX
23460	663	Outcrop sink	<i>Discarded site no. – natural</i>	BAX
23461	668	Rock shelter	<i>Discarded site no. – natural</i>	BAX
23462	670	Cairn	Marker	BAX
23621	Multiple	Excavated pits	Bird hunting	BAX
23626	904	Lava tube	Habitation	BAX
21285	900	Lava tube	Habitation	AALFTR
21299	901	Lava tube	Habitation	AALFTR
23463	multiple	Excavated pits	Bird hunting	AALFTR
23464	902	Lava tube	Habitation	AALFTR
23465	691	Lithic scatter/ Modified boulders	Lithic workshop/ Quarry	AALFTR
23622	multiple	Excavated pits	Bird hunting	AALFTR
23625	903	Lava tube	Habitation	AALFTR

Table 2. Summary of Newly Identified Sites in AALFTR Extension

State Site No	GANDA Site	Site Type	Site Status/Possible Function	Survey Area
21670	3	Modified lava flow	Volcanic glass quarries	AALFTR Ext
23466	4	Terrace	Trail	AALFTR Ext
23470	6	Mound	Possible marker	AALFTR Ext

1.2.3 Previously Recorded Sites

An additional seven sites in the project area (18671, 18673, 21308, 21667, 21669, 21671, and 23455) had been previously recorded by Roberts *et al.* (2000b), Shapiro *et al.* (1998), and Williams (2002) (see previous Archaeology section 3.3.2 below). The Phase I work determined that no additional data needed to be collected from these seven sites in order to evaluate the sites' eligibility for the NRHP.

A total of 24 archaeological sites are located in the project area, including nine sites in the BAX, eight sites in the AALFTR, and seven sites in the AALFTR Extension (Table 3). All 24 sites are described, discussed and evaluated for NRHP eligibility in this report.

Table 3. Inventory of Archaeological Sites in Project Area

SHPO Site (50-10-31-)	Site Type	Function	PTA Study Area
19490	Lava tube/structure complex	Repeated use occupation	BAX
21308	Lava tube	Repeated use occupation	BAX
23455	Excavated pits	Possible bird hunting	BAX
23456	Enclosure	Recurrent-use occupation	BAX
23457	Trail	Transportation	BAX
23458	Modified lava flow	Volcanic glass quarries	BAX
23462	Mound	Marker	BAX
23621	Excavated pits	Possible bird hunting	BAX
23626	Lava tube	Recurrent-use occupation	BAX
18673	Lava tube	Limited-use occupation	AALFTR
21285	Lava tube	Limited-use occupation	AALFTR
21299	Lava tube	Limited-use occupation	AALFTR
23463	Excavated pits	Possible bird hunting	AALFTR
23464	Lava tube	Limited-use occupation	AALFTR
23465	Lithic scatter; modified boulders	Lithic workshop; quarry	AALFTR
23622	Excavated pits	Possible bird hunting	AALFTR
23625	Lava tube	Limited-use occupation	AALFTR
18671	Lava tube	Limited-use occupation	AALFTR ext.
21667	Modified lava flow	Volcanic glass quarries	AALFTR ext.
21669	Modified lava flow	Volcanic glass quarries	AALFTR ext.
21670	Modified lava flow	Volcanic glass quarries	AALFTR ext.
21671	Modified lava flow	Volcanic glass quarries	AALFTR ext.
23466	Terrace	Trail	AALFTR ext.
23470	Mound	Possible marker	AALFTR ext.

1.3 SCHEDULE AND PERSONNEL

The fieldwork was conducted over a period of six weeks during March and April, 2003, under the direction of Jennifer Robins, B.A. and Alice Roberts, M.A., Principal Investigator. The field crew over various periods consisted of Carly Antone, Amy Buffum, Cassidy DeBaker, Alton Exzabe and Ana Lucia González.

2.0 ENVIRONMENT

PTA lies on the Saddle Region of Hawai‘i Island between the volcanic mountains of Mauna Kea to the north and Mauna Loa to the south. The project lies between roughly 6,000 and 6,600 ft above mean sea level (asl).

2.1 TOPOGRAPHY AND GEOLOGY

The landscape in the project area is composed primarily of cinder cones and level and undulant lava flows associated with Mauna Loa and Mauna Kea eruptions. The lava flows were mapped by the U.S. Geological Society (USGS) and designated as either Laupahoehoe Basalt from Mauna Kea eruptions (prefixed by *l*) or Kau Basalt from the later Mauna Loa eruptions (prefixed by *k*) (Wolfe and Morris 1996) (Figure 3, Table 4). The majority of the project lava flows were derived from Mauna Loa eruptions, including Kau Basalt types: *k1y*, *k1o*, and *k2* through *k5*. The Kau basalts consist of both *a‘ā* and *pāhoehoe* lava, often mixed in

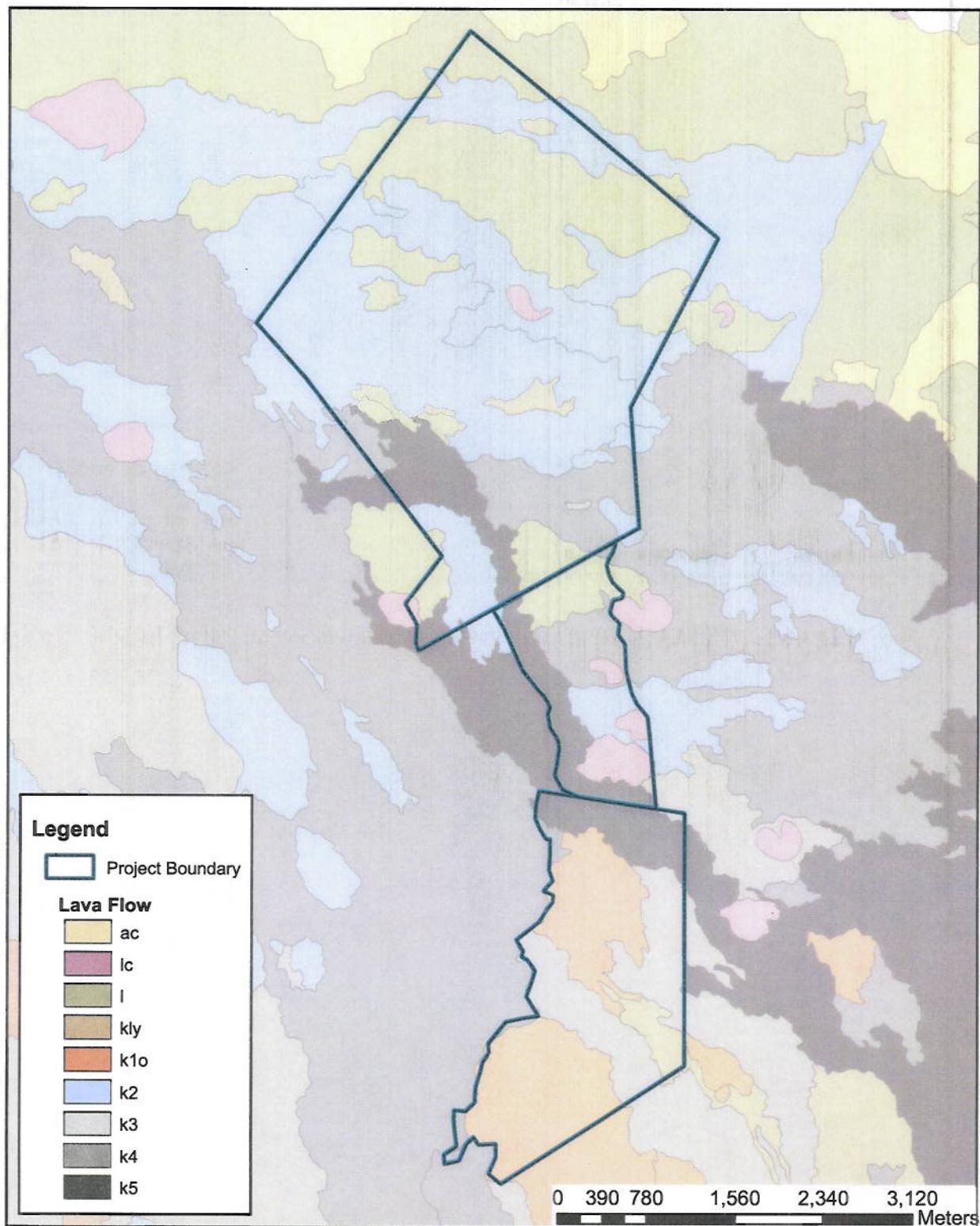


Figure 3. Lava Flows in Project Area (Source: Wolfe and Morris 1996)

Table 4. Geologic Designations and Ages of Lava Flows

Designation	Age
I	>10,000 B.P.
K1o	>5,000-10,000 B.P.
K1y	>3,000-5,000 B.P.
k2	>1,500-3,000 B.P.
k3	>750-1,500
k4	>400-750; 330 yrs B.P. ¹
k5	Historic – ca. 1843

single flows. A thin surface mantle of volcanic glass, also referred to as chill glass (cf. Williams 2002) occurs intermittently on the surface of *pāhoehoe* lava (k4 flow) inside and east of the project area (Figure 4). The volcanic glass formation is characterized by “a very dense *pāhoehoe*, typical of that which has degassed during transit in lava tubes and subsequently oozed out down slope” (Sinton 2004).

A single lava flow (lava type I) and scoria cones (lava type Ic) associated with Mauna Kea volcanics are present in the northern portion of the project area (see Figure 3). The type I lava is predominately *a‘ā* or blocky *a‘ā*. At least four scoria cones are inside the project area (Figure 5)

Subterranean caverns, such as lava tube and blisters are present in some of the *pāhoehoe* flows in the project area. Lava tubes are formed by quickly solidified underground rivers (MacDonald et al 1983:23); whereas lava blisters are hollow swellings created by gas bubbles under the molten lava.

2.2 VEGETATION

Vegetation at PTA and in the current project area is classified as montane dry and mesic forest grading to subalpine forest and shrubland. According to Shaw (1997: Introduction), “vegetation at PTA is a complex mosaic of plant communities directly related to the type and age of the substrate and subsequent amount of soil development.” Younger flows are relatively barren and support only limited vegetation such as *‘ohi‘a* (*Metrosideros*). Older flows with increasing soil development support small trees and shrubs such as *māmane* (*Sophora*), *naio* (*Myoporum*), *pūkiawe* (*Styphelia*), *a‘ali‘i* (*Dodonaea*), and *‘āweoweo* (*Chenopodium*). Ancient flows denoted by areas with well developed soils support various shrubs and grasses (Shaw 1997:10; Juvik and Juvik 1998:125–126).

3.0 CULTURAL BACKGROUND

3.1 TRADITIONAL HISTORY

The project area is located in the Saddle Region of Hawai‘i Island bounded by the volcanic mountains of Mauna Kea, Mauna Loa and Hualalai. The project is within the traditional land division or *ahupua‘a* of Ka‘ohe and island district of Hāmākua. Ka‘ohe extends from the Hamākua coast over the summit of Mauna Kea, encompassing most of the Saddle Region and the lower slopes of Mauna Kea (Figure 6). Hāmākua District was one of six pre-Contact districts on Hawai‘i Island that, by the 1600s, represented autonomous polities under the reign of the paramount chief ‘Umi a Liloā (Barrere 1983:25).

¹ Sinton 2004

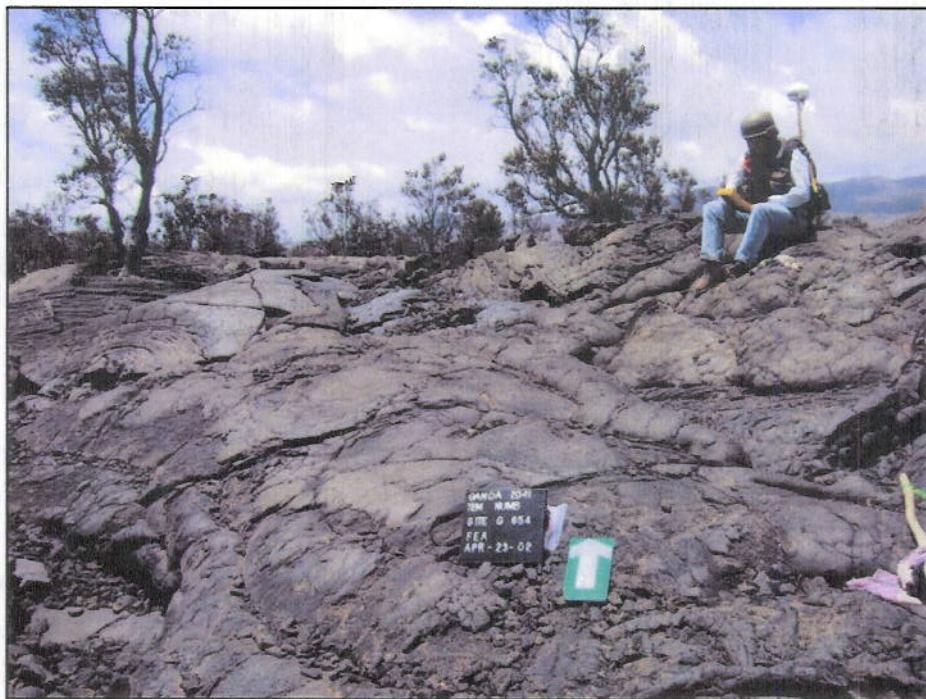


Figure 4. K4 Flow with Volcanic Glass Exposed in Surface

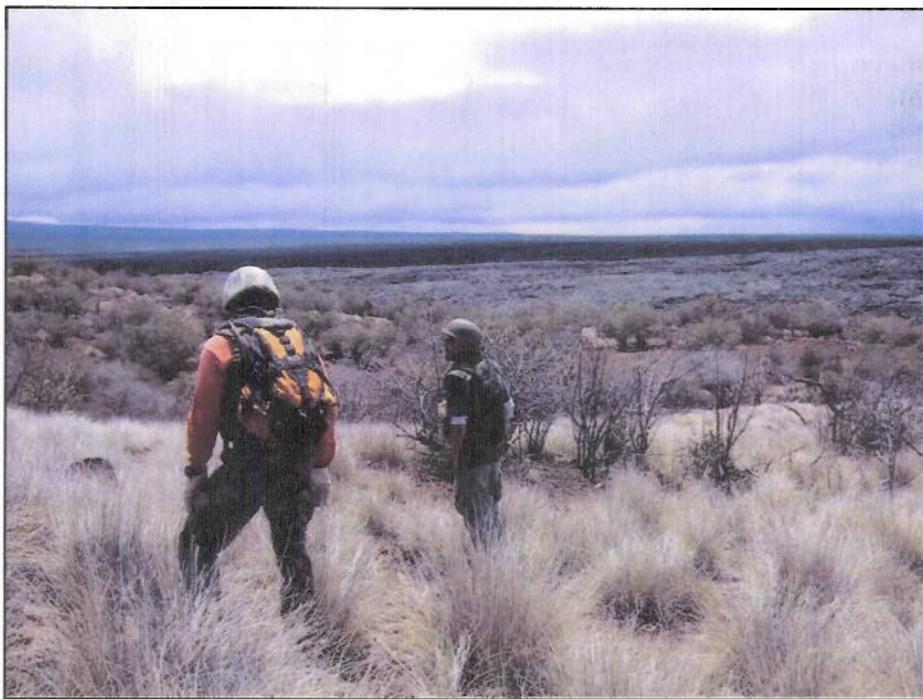


Figure 5. Survey Crew on Pu'u Kulua in AALFTR Extension Area

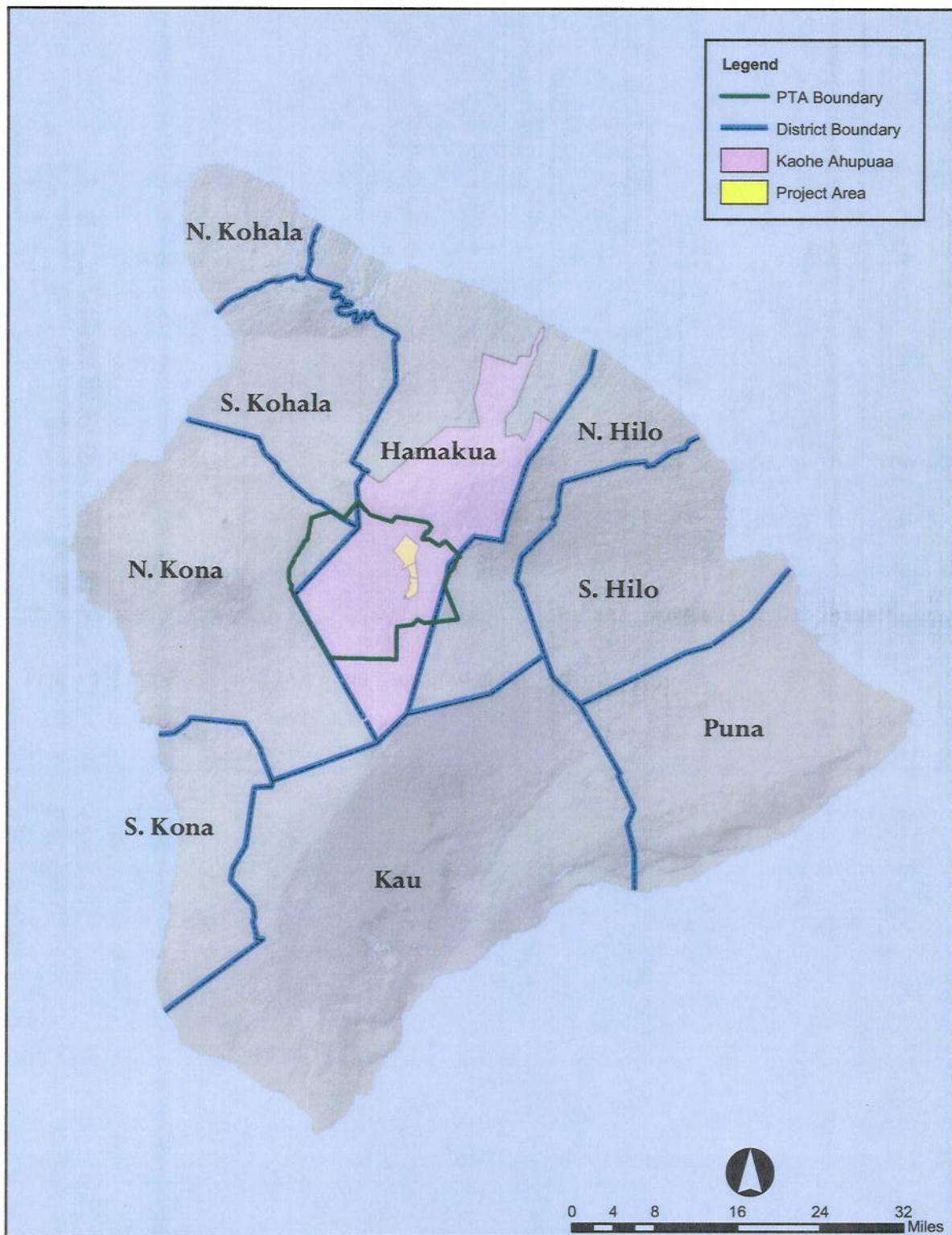


Figure 6. Hawai'i Island Showing District and Ahupua'a Boundaries

3.1.1 Warfare, Travel and Ceremony

Oral traditions and ethno-historic references to traditional Hawaiian activity in the Saddle Region are few. Extant references deal primarily with warfare, travel and establishment of ceremonial sites in the Saddle. Kamakau refers to 'Umi a Liloa's preference for traveling through the Saddle during times of war:

Umi went by way of the mountains to stir up fight with I-mai-ka-lani and the chiefs of Kona. He became famous as a chief who traveled through the mountains of Hawaii, and [its trails] became the routes by which he went to war (Kamakau 1992:18).

Later, 'Umi's son Keawenuiaumi also crossed the Saddle to battle his older brother Keli'iokaloa:

Therefore he made himself ready with his chiefs, war lords, war leaders, and warriors from Hilo, Puna, and Ka-'u to make war on Kona. The war parties [met?] at the volcano (pit of Pele) before going on to battle along the southern side of Mauna Kea and the northern side of Mauna Loa. The mountain road lay stretched on the level. At the north flank of Hualalai, before the highway, was a very wide, rough bed of lava-barren, waterless, and a desert of rocks. It was a mountain place familiar to 'Umi-a-Liloa when he battled against the chiefs of Hilo, Ka-'u, and Kona. There on the extensive stretch of lava stood the mound (ahu), the road, the house, and heiau of 'Umi. It was through there that Keawe-nui-a-'Umi's army went to do battle against his older brother, Ke-li'i-o-kaloa (Kamakau 1992:35).

'Umi used at least two main trails in the Saddle when traveling between the districts of Kona, Kohala and Ka'ū (Cordy 2000:210) (Figure 7). One of these trails ran along the northwest boundary of Hāmākua (and northwest portion of PTA) and provided access between the Kona coast and Waimea. Cordy (1994:106-107) describes this route as follows:

The main inland route connecting Waimea, Kohala, and Hāmākua with Kona ran from Waimea up to the point near where Ka'ōhe of Hāmākua and Waimea of Kohala adjoin, then just along the Hāmākua-Kona border, and finally down through the Hualālai-Mauna Loa gap. Here the trail passed the Ahu a 'Umi heiau in upland Kona and dropped down to the shore

Another of 'Umi's trails reportedly intersected the Kona-Waimea trail at Ahu a 'Umi and ran south to Ka'ū, past a second "Ahua 'Umi" near the summit of Mauna Loa (Cordy 1994:107).

A *heiau* (Ahu a 'Umi) was built under the direction of 'Umi on the course of the Kona to Waimea trail. It was at Ahu a 'Umi that 'Umi once resided, living off tribute generated by chiefs from the six island districts (Fornander 1996:101). Although Fornander (1996:100) disputes some of its details (particularly that Keli'iokaloa was 'Umi's opponent), another tradition claims the *heiau* was constructed by 'Umi to commemorate the final battle that secured 'Umi's rule over Hawai'i Island. Maly and Maly (2002:9-12) provide a translation of the tradition as it was reported in the Hawaiian newspaper *Ke Au Okoa* in 1865. The translator's comments are shown in brackets:

Between Mauna Kea and Hualalai the chief and all his party traveled, with the thought of descending to Kailua. Keli'iokaloa did not wait though, but instead, traveled with his warriors to meet Umi in battle. The two armies met on an open broad plain, surrounded by the three mountains, at the place called Ahu a Umi. There, Laepuni and them [people who were unattached to a chief] fought with Umi. Umi was almost killed, but Piimaiwaa leapt in and helped him, it was he who turned the battle in the favor of Umi's side. There is not much else that is said, but, it is known that the chief of Kailua died in the battle. Thus, with this battle, the entire kingdom was gained by Umi. He became the chief that controlled the entire island. So that the battle would be remembered from generation to generation, he built the stone altar that remains to this day, the altar [ahu] of Umi.